

From: [PETERSON Jenn L](#)
To: [Eric Blischke/R10/USEPA/US@EPA](#)
Subject: FW: Portland Harbor FWM
Date: 08/22/2006 11:47 AM

-----Original Message-----

From: HOPE Bruce
Sent: Tuesday, August 22, 2006 9:08 AM
To: PETERSON Jenn L; 'Goulet.Joe@epamail.epa.gov'; ANDERSON Jim M
Subject: FW: Portland Harbor FWM

FYI

-----Original Message-----

From: Nancy Judd [mailto:nancyj@windwardenv.com]
Sent: Tuesday, August 22, 2006 9:02 AM
To: HOPE Bruce
Cc: Lisa Saban; John Toll
Subject: Portland Harbor FWM

Bruce,
As a follow up to our conversation, here is the agency comment on the 2005 FWM on water concentration that led us to using the filtered water data:

Page 18, Section 4.2.1.2, Environmental Parameters, Water Chemistry:
Only total chemical concentrations were used in the model (sum of concentrations from the XAD filter and water column). In the absence of empirical data on dissolved and particulate concentrations, the model calculates these fractions. However, since empirical data does exist from the XAD analysis, these data should be used in model. The Arnot and Gobas model parameters are: chemical concentration in water (total) and chemical concentration in water (dissolved).

The following approach to convert filtered water concentration to bioavailable water concentration was recommended by Jon Arnot.
$$\text{bioavailable water conc} = \text{filtered water concentration} / (1 + (\text{Kow} * 0.08 * \text{DOC}))$$

The reference for this equation is:
Morrison HA, Gobas FAPC, Lazar R, Whittle DM, Haffner GD. 1997.
Development and verification of a benthic/pelagic food web
bioaccumulation model for PCB congeners in Western Lake Erie. Environ
Sci Technol 31:3267-73.

In the Morrison paper, an adjustment was made (multiplying 0.5* DOC in the denominator, not shown in the above equation) because the filter diameter used for that study was smaller (0.2um) than DOC particles (0.45 um). The filter size for LWG DOC water sampling was 0.5um- so this adjustment was not necessary.

Here is the VBA code change we made:

New code:

```
CWB = Worksheets("inputs").Cells(10, 4)
```

Old code:

```
CWB = (CWT / 1000) * BSF
```

We also changed the CWB equation (cell D10) in Excel spreadsheet:
$$=(D9/(1+((10^D4)*0.08*D18)))/1000$$

Cell D9 is now the filtered XAD water concentration (rather than total water concentration), cell D4 remains the Kow, and D18 remains the empirical concentration of dissolved organic carbon in the water. The value 0.08 is the DOC -octanol proportionality constant (Burkhard 2000 as cited in Arnot and Gobas 2004) and is to adjust for the fact that the Kow is used, rather than the Koc (as in Morrison et al 1997) to account for bioavailability. The new approach leads to an approximately 1/3 lower bioavailable water concentration for total PCBs compared to the previous approach (as presented in the 2005 FWM and calculated from total water concentration). The other "bioavailable fraction parameters" besides DOC (POC, etc) are no longer used in the model. Let me know if you have any questions about this. Thanks, Nancy

Nancy Judd

Windward Environmental, LLC

200 West Mercer St., Suite 401

Seattle, WA 98119

Phone(direct line): 206-812-5419

Phone(main line): 206-378-1364

Fax: 206-217-0089

E-mail: nancyj@windwardenv.com

www.windwardenv.com

This communication is made under the framework of the LWG Participation Agreement and in the parties' common interests in meeting LWG member obligations under the Administrative Order on Consent and in anticipation of litigation concerning liability for the Portland Harbor Superfund site. This communication is intended and believed by the parties to be part of an ongoing and joint effort to develop and maintain a common legal strategy and contains strategies, work product and legal advice within the "common interest" extension of the attorney-client privilege and the work product doctrine. This communication may include attorney-client communications. With respect to communications by private LWG members to public members, those communications are with the expectation that they will be kept confidential by the public entities. The information is intended to be for the use of the individual or entity named above. If you are not the intended recipient, please be aware that any disclosure, copying, distribution or use of the contents of this information is prohibited. If you have received this electronic transmission in error, please notify me by telephone at (206)812-5419, or by electronic mail, nancyj@windwardenv.com.